

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
1 April 2004 (01.04.2004)

PCT

(10) International Publication Number  
**WO 2004/026462 A1**

(51) International Patent Classification<sup>7</sup>: **B01J 19/08**

(21) International Application Number:  
PCT/US2003/029419

(22) International Filing Date:  
17 September 2003 (17.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/411,816 18 September 2002 (18.09.2002) US

(71) Applicant (for all designated States except US): **UNIVERSITY OF WYOMING** [US/US]; 16th and Gibbon, Laramie, WY 82071 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **AGARWAL, Pradeep, K.** [US/US]; 2121 East Curtis Street, Laramie, WY 82072 (US). **ACKERMAN, John** [US/US]; 1514 Palomino Drive South, Laramie, WY 82070 (US). **BORGIALLI, Ron** [US/US]; 1409 LaPrele, Laramie, WY 82070 (US). **FISCHER, Steven** [US/US]; 404 North Aster Avenue, Broken Arrow, OK 74012 (US). **HAMMAN,**

Jerry [US/US]; 1722 Symons, Laramie, WY 82070 (US). **MUKNAHALLIPATNA, Suresh** [IN/US]; 1208 East Gibbon, Apt. #3, Laramie, WY 82072 (US). **ZHANG, Ji-Jun** [CN/US]; 2143 Garfield #19, Laramie, WY 82070 (US).

(74) Agent: **TRACY, Emery, L.**; P.O. Box 1518, Boulder, CO 80306 (US).

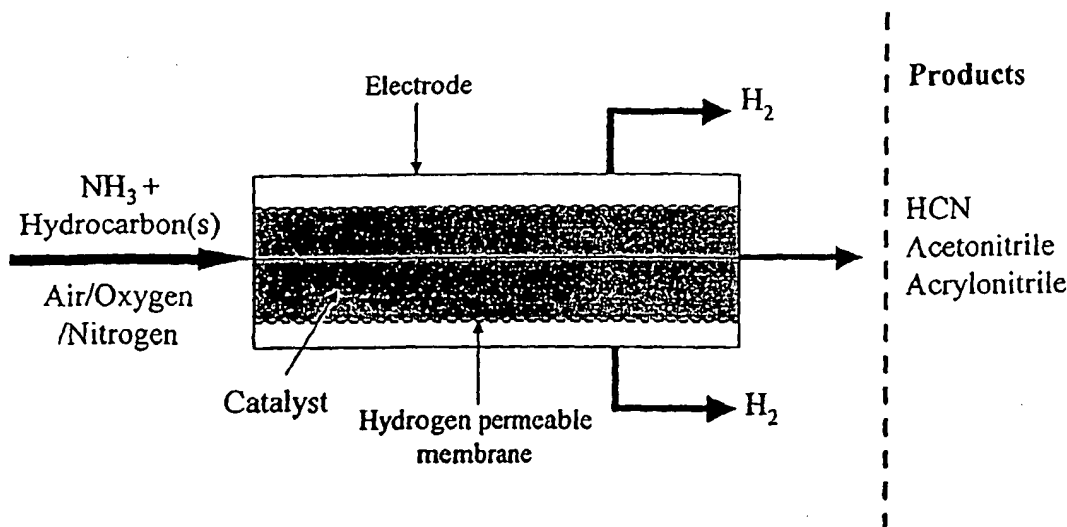
(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:  
— with international search report

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR THE MANUFACTURE OF HYDROGEN CYANIDE AND ACRYLONITRILE WITH SIMULTANEOUS RECOVERY OF HYDROGEN



(57) Abstract: A system and method for the manufacture of hydrogen cyanide, acrylonitrile, and acetonitrile are provided. The system comprises at least one pulsed corona discharge reactor with each pulsed corona discharge reactor having a reaction zone. At least one reactant feed stream containing hydrogen is introduced into the pulsed corona discharge reactor and contacting the catalyst wherein hydrogen is removed from the reactant to form hydrogen cyanide, acrylonitrile, and acetonitrile.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*